Negative Phase-Sequence Filters With Independent Arms 105-58-6-7/33

SUBMITTED: April 30, 1957

1. Electric filters--Performance 2. Electric filters--Mathematical analysis 3. Electric filters--Equipment

Card 4/4

VITANOV, A.B., inzh.

Theory and application of three-phase system components.
Elektrichestvo no.6:77-84 Je '64 (MIRA 17:7)

1. Institut energetiki, Sofiya, Bolgariya.

VITANOV, A.B., inzh.

New device for locating damaged phases. Elek. sta. 33 no.5:61-66 My '62. (MIRA 15:7)

1. Institut energetiki Bolgarskoy Akademii nauk.
(Electric power distribution)
(Electric measurements)

CZECHOSLOVAKIA

O. VINAR [Same affiliation as above.]

"News in Clinical Use of Psychopharmacologic Drugs."

Prague, Activitas Nervosa Superior, Vol 5, No 1, Jan 63; pp 93-105.

Abstract [English summary modified]: A general review of the current literature. In addition to the usual US drugs, comments about the Czech anti-euphorians (for agitated, manic patients) phenoharmane, bis-homoreserpine which author found essentially same as reserpine clinically, chlorproheptadine (Cl analog of amitriptyline), dichlorpromazine, the Hungarian trioxazine and the Soviet di-isopropyliputrescine and a few other Czech analogs of drugs well known in the West. One Hungarian, 6 Soviet, 35 Czech and 70 Western references.

1/1

VITANOV, Al.

Theory and application of the components of a three-phase system.
Izv Lab avtomat telemekh 1:37-71 '64.

VITANOV, Aleksandur B., inzh.

Threshold characteristics of phase comparison relays and networks with 180° operating range. Teknika Bulg 13 no.9:6-9 '64.

1. Institute of Electric Power Engineering.

VITANOV, A.B., inzh. (Bolgariya, Sofiya).

Negative phase-sequence filters with independent arms. Elektrichestvo no.6:29-32 Je '58. (MIRA 11:6)
(Electric filters)

MICHEV, V., dots. kand. na tekh. nauki.; VITANOV, D., inzh.

Quality of the Bulgarian low-carbon steels for the manufacture of wire and binding materials. Min delo 18 no.3:22-25 '63.

VITANOV, D. P.

USSR/Cultivable Plants - Grains.

Abs Jour : Ref Zhur - Biol., No 3, 1958, 10741

Author : Kryukov, A.I., Vitanov, D.P.

Inst : Kamensko-Dnepropetrovsk Testing Amelioration Station

Title : Corn Under Conditions of Irrigation.

Orig Pub : Kukuruza, 1956, No 6, 20-22

Abstract : The Kamensko-Dnepropetrovsk Testing Amelioration Station has determined (1050-1955) that in years of average dryness corn yields are more than double by irrigation. The best predecessors of irrigated corn are grains, potato, and melon-vegetable crops. /viagovaryadkovyy/ irrigation is best done in October-November (normal rate -- 900-1000 m^3/hectare); in the second part of the summer at least tow vegetation irrigations should be given (at 600-700 m^3/hectare): the first during the phase when panicles are

Card 1/2

USSR/Cultivable Plants - Grains

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001860110018-5"

Abs Jour : Ref Zhur - Biol., No 3, 1958, 10741

being discarded, and the second -- when the ears are filling out with grain. Up to 400 centners of green mass per hectare were harvested from a corn field which followed a harvest of early vegetables and winter wheat.

Card 2/2

RUBIN, V.F.; VITANOV, D.R.

[Cabbage]Kapusta. Kyiv, Derzh.vyd-vo sil's'kohospodars'koi lit-ry URSR, 1961. 91 p. (MIRA 15:10)
(Cabbage)

VITANOV, G.

Obtainment of rolled metals with minus tolerances. Min delo 18 no.3:25-26 '63.

1. Nauchnoizsledovatelski institut po cherna metalurgiia.

VITANOV, Kolcho, inzh.

Sound range in radio broadcasting. Tekhnika Bulg 10 no.1:24-26 '61.

VLTANOV, K.

"Filters for Elimination of Interferences."

p 45 (Radio I Televiziia, Vol. 7, No. 6, 1958, Sofiia, Bulgaria)

Monthly Index of East European Accessions (EEAI) LC, Vol. 7, No. 11, Nov. 1958

VITANOV, K.

Limits of maximal amplitude in amplifiers. p.57.
(RADIO I TELEVIZIIA, Vol. 6, no. 3, 1957, Sofia, Bulgaria.)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 12, December 1957 Uncl.

VITANOV, K.

Calculating the filter choking coil in current-rectified group. p. 56.
(RADIO I TELEVIZIIA, Vol. 6, no. 4, 1957, Sofia, Bulgaria.)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 12, December 1957 Uncl.

VITANOV, K.

Arrangement of loud-speakers in modern radio sets. p. 38.
(RADIO I TELEVIZIIA, Vol. 6, no. 5, 1957, Sofia, Bulgaria.)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 12, December 1957 Uncl.

VITANOV, K.

Tune regulator in modern radio reveivers. p. 4.
(RADIO I TELEVIZIIA, Vol. 6, no. 6, 1957, Sofia, Bulgaria.)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 12, December 1957 Uncl.

VITANOV, K.

Current Regulator Groups. RADIO (Radio) #11:37:Nov 54

VITANOV, K.

Calculation of the Smoothing Filter Choke. RADIO (Radio) #11:43:Nov 54

VITANOV,K.

Characte istics of European Detecting and R dio Tubes with a Heatin Filament of 6.3 AC Volt. RADIO (Radio) #11:47:Nov 54

VITANOV, K.

The Second Congress of the DOSO Organization. In Radio Engineering, No. 2:1 Feb 55

VITANOV, K.

Radio Communication in the First Years Since the Founding of the Soviet Army (In the War of Intervention). In Radio Engineering, No. 2:3 Feb 55

VITANOV, K.

Feb 55 A Patriot and Fighter for Freedom. In Radio Engineering, No. 2:5

VITANOV, K.

Measuring the Phase Shift Between Potentials. Radio Engineering, #3:42:Mar.55

VITANOV, K.

Cathode Amplifiers. Radio Engineering, #4:19:Apr.55

VITANOV, K.

Magnetic and Electroacoustic Shielding (Screening of Sound Transformers. Radio Engineering, #6:15:June 55

VITANOV, K.

VITANOV, K. Nonlinear curves with low-frequency amplifiers. p. 34. Vol. 5, no. 11, 1956 ELEKTROENERGIIA. Sofiia, Bulgaria

SOURCE: East European Accessions List (EEAL) Vol 6, No. 4--April 1957

VITANOV, K.

Magnetic and electroacoustic projection of sound transformers. p. 15.

Vol. 4, no. 6, 1955
RADIO
Sofiya, Bulgaria

So: Eastern European Accession Vol. 5 No. 4 April 1956

VITANOV, K.

Calculation of acoustics in a radio transmitting studio. p. 81.

Vol. 4, no. 7/8, 1955
RADIO
Sofiya, Bulgaria

So: Eastern European Accession Vol. 5 No. 4 April 1956

VITANOV, K.

Antennas for the radio wire system. p. 46.

Vol. 4, no. 9, 1955
RADIO
Sofiya, Bulgaria

So: Eastern European Accession Vol. 5 No. 4 April 1956

VITANOV, K.

Vitanov, K. Cathode-ray tubes. p. 19. RADIO. Sofiya. Vol. 4, no. 4, 1955.

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 11, Nov. 1955, Uncl.

VITANOV, L.

The manufacture of agricultural machinery in Bulgaria. Tr. from the Bulgarian.

P. 246. (Zemedelske Stroje.) (Praha, Czechoslavakia) Vol. 2, No. 11, Nov. 1957

SO: Monthly Index of East European Accession (EEAI) LC. Vol 7 No. 5, May 1958

VITANOV, N.

Advantageuos coordination of irrigation with water-power production in Bulgaria.
p. 40 Khidrotekhnika I Melioratsii Vol. 3, No. 2, 1958. Sofiia Bulgaria

Monthly Index of East European Accessions (EEAI) LC, Vol. 7, No. 10,
Oct. 58

VITANOV, M

Coordinated use of water for electric-power installations and irrigation. p. 19. TEKHNIKA, Sofiya, Vol. 4, no. 6, Aug./Sept. 1955.

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 5, No. 6 June 1956, Uncl.

VITANOV, Mikhail, d-r.

Economic effect of the pumping stations at the "Begleka", and "Toshkov chark" dams during 1959 and 1960. Elektroenergiia 12 no.9: 8-11 '61.

(Pumping stations) (Electric power)

VITANOV, M.

"More machines for agriculture" (p. 20) KOOPERATIVNO ZEMEDELIE (Ministerstvo na zemedelieto) Sofiya Vol 8 No 12 1953

SO: East European Accessions List Vol 2 No 7 Aug 1954

VITANOV, Mikhail, d-r

Some improtant economic problems in the exploitation of large dams in Bulgaria. Elektroenergiia 14 no. 12: 3-6 D '63.

BULGARIA / Diseases of Cultivated Plants. O

Abs Jour : Ref Zhur - Biol., No 9, 1958, No 39704

Author : Vitanov, M. M.
Inst : Dryanov Vegetable Experimental Station (Bulgaria)
Title : New Possibilities for Controling Red Leaf Spot on Plum Trees.

Orig Pub : Byul. rastit. zashchita, 1957, 6, No 1, 37-41.

Abstract : The spraying of the soil under the trees with 1% "selinon" in the fall, after the shedding of leaves, or in the spring, before the opening of the buds, guarantees an almost total destruction of the stromata fungus. It prevents the formation of perithecia with ascospores, which cause this spring infection. Selinon in concentrations of 1.5, 1.0 and 0.5% is considerably much more effective than 1% Bordeaux mixture, 1% copper sulfate, 1% ferrous

Card 1/2

VITANOV, Marko

Possibilities of cultivating the rust-resistant plum varieties.
Selskostop nauka 2 no.1:51-58 '63.

VITANOV, M.P., d-r

Variable irrigation standard in the study of the expenses spent on the equipment of water economy. Tekhnika Bulg 3 no.1:12-17 Ja '54.

VITANOV, M.P., d-r

Economic security of irrigation undertakings. Tekhnika Bulg 3 no.3:25-29 Mr '54.

VITANOV, S.; TODOROV, I.

"Further development of the domestic industry."

p. 5 (Leka Promishlenost, Vol. 6, no. 7, 1957, Sofiia, Bulgaria)

Monthly Index of East European Accessions (EEAI) LC, Vol. 7, No. 6, June 1958

TRIFONOV, As.; VITANOV, T.

Investigating the complexes of Fe(III) with lactic acid in water solutions. Izv Inst khim BAN 7:309-319 '60.
(EEAI 10:9)

1. Khimicheski institut pri BAN.

(Lactic acid) (Iron) (Water) (Solutions)

BUDEWSKI, E. [Budevski, E.]; VITAKOV, T.; BOSTANOV, V.

Mechanical equipment for producing rectangular galvanostatic impulses. Doklady BAN 17 no.8:725-728 '64.

1. Institute of Physical Chemistry of the Bulgarian Academy of Sciences, Sofia. Vorgelegt von St. Christov [Khristov, St.], korr. Mitglied der Akademie.

VITANOV, V.A. (Sofiya)

Influence of wars on demographic processes in Bulgaria.
Sov. zdrav. 21 no.3:75-79 '62. (MIRA 15:3)
(WAR)
(BULGARIA--DEMOGRAPHY)

VITANOVA, K.

"New broadcasts for our young listeners." p 1. (RADIO PREGLED, Vol. 8 #9, Feb. 1953, Bulgaria)

SO: Monthly List of East European Accessions, Vol. 2 #8, Library of Congress, August, 1954, Uncl.

S/137/62/000/003/045/191
A006/A101

AUTHORS: Aradi, A., Vitanyi, P.

TITLE: Problems of vanadium metallurgy

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 3, 1962, 22, abstract 30142 ("Kohász lapok", 1961, v. 94, no. 7, 308 - 314, Hungarian; Russian, English and German summaries)

TEXT: In Hungary V is obtained by processing wastes in alumina production. On the basis of the raw material amount, V production could be raised by a factor of 1.5. Experiments were made with refining VCl_4 of O_2. It was established that $VOCl_3$ and VCl_4, unlike VCl_3, are well dissolved in CCl_4. This made it possible to separate VCl_3 from VCl_4 and $VOCl_3$. VCl_4 should be preliminarily reduced to VCl_3 according to reaction $2VCl_4 + 2HI = 2VCl_3 + 2HCl + I$. The VCl_3 obtained was refined by vacuum distillation from I, VCl_4 and $VOCl_3$. However, refining from I was not complete. The given technology makes it possible to refine the raw material and to obtain pure V_2O_5.

B. Mat'yush

[Abstracter's note: Complete translation]

Card 1/1

S/137/62/000/001/028/237
A060/A101

AUTHORS: Aradi Antal, Vitányi Pálné

TITLE: Chlorination of vanadium

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 1, 1962, 20, abstract 1G153 ("Fémipari kutató int. közl.", 1960, 4, 371-380, 403, 417, 427; Hungarian; Russian, German, English summary)

TEXT: Investigations were carried out, directed towards obtaining VCl_4 from V_2O_5 by chlorination reduction. It was established that the degree of oxychloride admixture in the VCl_4 obtained depends upon the temperature and carbon concentration.

G. Svodtseva

[Abstracter's note: Complete translation]

Card 1/1

VITAR, MIRKO

10(0); 26(1) PHASE I BOOK EXPLOITATION CZECH/2369

Československá Akademie Věd. Sekce technická

Proudění v lopatkových strojích (Flow Through Turbomachinery) Praha, Nakladatelství Československé Akademie Věd, 1958. 413 p. (Series: Its: Sborník ústavu pro výzkum strojů) Errata slip inserted. 1,250 copies printed.

Scientific Ed.: Jan Jerie, Engineer, Doctor, Corresponding Member of the Czechoslovak Academy of Sciences; Resp. Ed.: Ladislav Hrdina; Tech. Ed.: František Končický.

PURPOSE: This collection of papers is intended for engineers and scientific workers in the field of turbomachinery.

COVERAGE: The collection covers turbomachinery theory, investigations of the flow of working substance in basic elements of turbomachines, phenomena accompanying flow and variable with time, and investigations of various problems on experimental machines and models. A Russian and an English summary follows each paper. No personalities are mentioned. There are 189 references: 73 Czech, 57 English, 38 German, 20 Russian, and 1 Dutch.

IV. RESEARCH WITH MODEL MACHINES

V. MEASURING INSTRUMENTS

AVAILABLE: Library of Congress

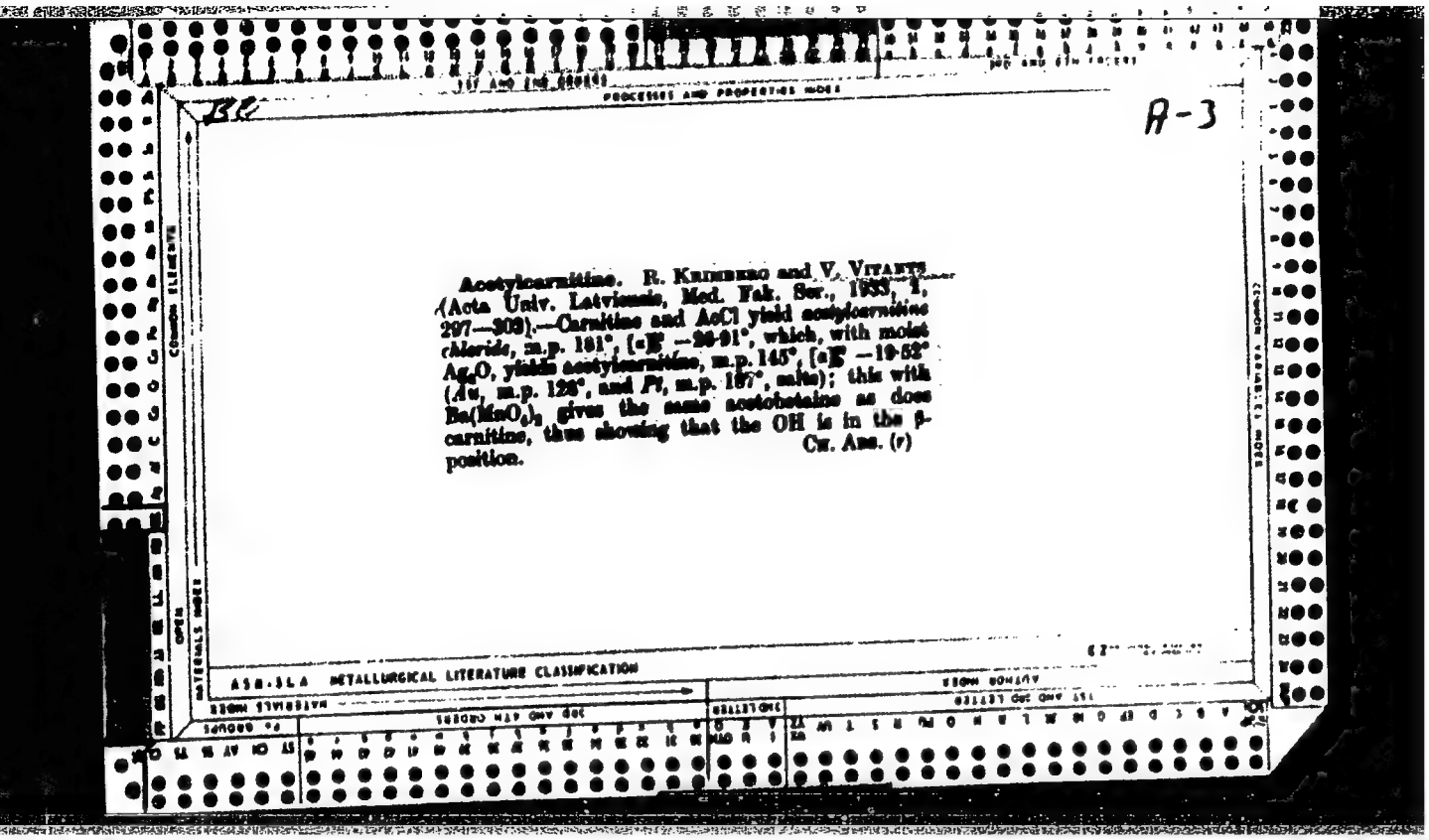
GO/fal
11-29-59

Card 7/7

LEPES, Tibor, Major dr.; VITANOVIC, Radmila, biolog.

Resistence of Anopheles maculipennis to DDT in Macedonia. Voj. san. pregl., Beogr. 13 no.5-6:243-249 May-June 56.

1. Katedra za higijenu i epidemiologiju, VMA. Institut za mikrobiologiju i parazitologiju. Parazitolosko odeljenje.
(MOSQUITOES, eff. of drugs on
DDT on Anopheles maculipennis (Ser))
(DDT, eff.
on Anopheles maculipennis (Ser))



A-3

Acetylcarnitine. R. Kreimers and V. Vitants (Acta Univ. Latviensis, Med. Fak. Ser., 1933, 1, 297—309).—Carnitine and AcCl yield acetylcarnitine chloride, m.p. 181°, $[\alpha]_D^{20}$ −26·91°, which, with moist Ag_2O, yields acetylcarnitine, m.p. 145°, $[\alpha]_D^{20}$ −19·52° (*Au*, m.p. 128°, and *Pt*, m.p. 187°, salts); this with $Ba(MnO_4)_2$ gives the same acetobetaine as does carnitine, thus showing that the OH is in the β-position. Cr. Abs. (r)

VITANYI, IRINA

S/081/62/000/002/062/107
B156/B101

AUTHORS: Aradi, Antal; Major, Gabriella; Vitányi, Irina

TITLE: Removal of vanadium oxychloride from vanadium chlorides of lower valency

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 2, 1962, 364, abstract 2K103 ([Fémipari Kutató Intézet]. Hungarian patent 147788, 30. 11. 60)

TEXT: In order to produce pure VCl_3 (used in the production of metallic vanadium), the initial product is treated several times with an organic nonpolar solvent (CCl_4, CS_2 or gasoline), and the solution of oxychlorides and chlorides of vanadium with higher valencies separated from the undissolved VCl_3. The organic phase is then shaken up with water, converting the vanadium compounds into an aqueous solution. The regenerated solvent is returned for further use, and the compounds of vanadium are precipitated from the aqueous phase and reprocessed into VCl_3. [Abstracter's note: Complete translation.]

Card 1/1

GERSHENSON, S., KOK, L.P., VITAS, K.I., DOBROVOLSKAYA, G.N. and a SKURATOVSKAYA, I. N.

"Formation of a DNAOcontaining Virus by Host RNA."

report submitted for the 5th Intl. Congress of Biochemistry, Moscow, 10-16 August 1961.

Dept. of Genetics, Inst. of Zoology, Acad. Sci. Ukr SSR

VITAS, K.I.,
M.P. PANASSYUK, (Main results of the scientific research work during 1937 of the Pan-Soviet Scaintific Research Institute for the Sugar Industry(VNIS) 483 pp. 30 figs., 31 diags., 14 graphs., 1939. (pp 257-260)(260-262)

VITAS, K. I.,

"Effect of Various Methods of Pre-sowing Treatment of Beet Seed on Infection with Korneed (A Complex Disease)," in Principas Conclusions of the Scientific-Research Work of the All Union Scientific-Research Institute for the Sugar Industry for 1937, State Technological-Economical Publishing House of Food Industry, Moscow, 1939, pp. 255-257. 65.9 V96

So: Sira - Si-90-53, 15 Dec. 1953

VITAS, K. I.

K. I. Vitas, "Study of the Fungus Botrytis cinerea Pers. and Other Fungi for Use during Microbiological Analysis of the Infection of Beet Roots by Storage Rot," in Principal Conclusions of the Scientific-Research Work of the All Union Scientific - Research Institute for the Sugar Industry for 1938, State Technological-Economical Publishing House of Food Industry, Moscow, 1940, pp. 166-167.
65.9 V96

SO: Sira Si 90-53, 15 Dec 1953

VITAS, K. I.

See: SALUNSKAIA, N. I., GOMOLIAKO, N. I., and GRINBERG, D. N.

VITAS, K. I. "Study of Rhizoctonia on Sugar Beets," in Principal Conclusions of the Scientific-Research Work of the All Union Scientific-Research Institute for the Sugar Industry for 1937, State Technological-Economical Publishing House of Food Industry, Moscow, 1939, pp. 260-262. 65.9 V96

So: Sira - Si - 90- 53, 15 December 1953

GERSHENZON, S.M.; KOK, I.P.; VITAS, K.I.; DOBROVOL'SKAYA, G.N. [Dobrovol's'ka, H.M.]; SKURATOVSKAYA, I.N. [Skuratovs'ka, I.N.]

Formation of a virus containing deoxyribonucleic acid by a ribonucleic acid host. Dop. AN URSR no. 12:1638-1641 '60. (MIRA 14:1)

1. Institut zoologii AN USSR. Predstavleno akademikom AN USSR V.G. Kas'yanenko.

(Silkworms) (Nucleic acids) (Viruses)

VITAS, K. I., DOBROVOLSKAYA, G. N., SKURATOVSKAYA, I. N., GERSHENZON, S.M., KOK, I. P., (USSR)

"DNA Containing Virus Formation with the Acid of Host RNA."

Report presented at the 5th Int'l. Biochemistry Congress, Moscow, 10-16 Aug 1961.

29459
P/033/61/013/004/002/005
D250/D302

16.3100

AUTHORS: Babuška, Ivo, and Vitásek, Emil (Prague)

TITLE: The Wiener-Hopf technique in the theory of difference equations (II)

PERIODICAL: Archiwum mechaniki stosowanej, v. 13, no. 4, 1961, 457-468

TEXT: The authors extend the discussion of their previous work (Ref. 1: Wiener-Hopf technique in the theory of difference equations (I), Arch. Mech. stos. 1, 13 (1961) 3-21) to two dimensions. The problem is defined as follows: M_2 denotes the set of all mesh points in the two-dimensional Euclidean space, and R_2 the set of all appropriately bounded complex functions defined on M_2. Let $D \subset M_2$. $R_2^{(D)}$ will indicate a subspace of the space R_2 of functions f, for which

Card 1/8

The Wiener-Hopf technique ...

$$f(r) = 0 \text{ for all } r \in M_2 - D \tag{2.2}$$

Let $f \in R_2$. The function $f^{(D)} \in R_2^{(D)}$ is made to correspond the function f, according to the rule

$$f^{(D)}(r) = f(r) \text{ for all } r \in D \tag{2.3}$$

Let $\hat{R}_2$ be the set of all functions $a \in R_2$, for which the following holds: For every integer $p \geqslant 0$ there exists a constant $C_p \geqslant 0$, such that

$$|a(r_1, r_2)| \leqslant \frac{C_p}{(1+|r_1|^p)(1+|r_2|^p)} \tag{2.4}$$

Card 2/8

The Wiener-Hopf technique ...

for all $r \in M_2$. Further let $a \in \hat{R}_2$. Then a mapping A defined by the rule

$$(Af)(r_1,r_2) = \sum_{s_1=-\infty}^{\infty} \sum_{s_2=-\infty}^{\infty} a(r_1 - s_1, r_2 - s_2) f(s_1,s_2) \qquad (2.5)$$

is the convolution mapping of the space R_2 into R_2. Let $A^{(D)}$ designate the mapping of the space $R_2^{(D)}$ into the space $R_2^{(D)}$, defined by the rule $A^{(D)}f = (Af)^{(D)}$,

$$A^{(D)}f = (Af)^{(D)} \qquad (2.6)$$

Card 3/8

The Wiener-Hopf technique ...

The problem of finding a function $g \in R_2^{(D)}$ such that $A^{(D)}g = f$,

$$A^{(D)}g = f \tag{2.7}$$

is called the Wiener-Hopf A-problem on the set D. Then the solution is given by the following theorem: Let D be an arbitrary set of mesh points, W(D) its WH-kernel, and $W(M_2-D)$ the WH-kernel of its complement. Further let a K_1, K_2 decomposition be possible for A, such that $K_1 \subset W(D)$, $K_2 \subset W(M_2-D)$. Then the Wiener-Hopf A-problem on the set D has one and only one solution for each right hand side $f \in R_2^{(D)}$. This solution is given by the formula

$$g = \mathcal{F}^{-1}\left\{\frac{1}{\mathcal{F}c}\mathcal{F}\left[\mathcal{F}^{-1}(\mathcal{F}d\mathcal{F}f)\right]^{(D)}\right\} \tag{5.2}$$

Card 4/8

The Wiener-Hopf technique ...

where

$$\begin{cases} \mathcal{F}_c = e^{\mathcal{F}\left([\mathcal{F}^{-1}(\ln \mathcal{F}\alpha)]^{(K_1)}\right)}, \\ \mathcal{F}_d = e^{-\mathcal{F}\left([\mathcal{F}^{-1}(\ln \mathcal{F}\alpha)]^{(K_2-K_1)}\right)} \end{cases} \tag{5.3}$$

The WH-kernel of the set D is denoted by W(D) and defined as follows: Let r be an arbitrary fixed mesh point $r \in D$. Further let $p_r(\varphi)$ be a ray originating in this point and forming an angle φ with the positive direction of the axis X_1, and let V_r be the set of such $p_r(\varphi)$, for which $(p_r(\varphi) \cap M_2) \subset D$. Let a ray $g_r(\varphi)$ originating in the origin and forming the same angle with the positive direction of the axis X_1, correspond to each ray $p_r(\varphi)$. Thus a certain set is made - call it $V_r^{(0)}$ - of rays originating in the origin,

Card 5/8

The Wiener-Hopf technique ...

corresponding to every point $r \in D$. Then

$$W(D) = \left(\bigcap_{r \in D} V_r^{(0)}\right) \cap M_2 \qquad (4.19)$$

K_1, K_2 decomposition for the operator A is said to be possible if sets and functions described as follows exist: Let $a \in \hat{R}_2$ and let a have the index zero. Further let a have the property that the sets K_1, $K_2 \in \mathfrak{M}_2$ exist, such that $\mathfrak{F}^{-1}(\ln \mathfrak{F}a) \in K_1 \cup K_2$. Then there exist such functions c and d, $c \in \hat{R}_2$, $d \in \hat{R}_2$, c, d have the index zero, $c \in R_2^{(K_1)}$, $d \in R_2^{(K_2)}$ that

$$\mathfrak{F}a = \frac{\mathfrak{F}c}{\mathfrak{F}d} \qquad (4.16)$$

Card 6/8

The Wiener-Hopf technique ...

The Fourier transform is defined by:

$$\mathcal{F}f = \sum_{s \in M_2} f(s) e^{i(s_1 x_1 + s_2 x_2)} \qquad (4.8)$$

Say that $\alpha \in \hat{R}_2$ has the index zero if $\mathcal{F}\alpha \neq 0$ for all $X \in E_2$;

$$[\mathrm{Arg}(\mathcal{F}\alpha)(x_1, x_2)]_{x_1=0}^{x_1=2\pi} = 0, \quad [\mathrm{Arg}(\mathcal{F}\alpha)(x_1, x_2)]_{x_1=0}^{x_2=2\pi} = 0 \qquad (4.10)$$

Also assume that the set $K \subset M_2$ belongs to the class $\mathcal{M}_2$, if it

Card 7/8

The Wiener-Hopf technique ...

is formed by all the mesh points lying on all rays $p(\varphi)$, issuing from the origin and forming an angle φ with the positive direction of the axis X_1, such that $\alpha \leqslant \varphi \leqslant \beta$ or $\alpha < \varphi < \beta$, where $\beta - \alpha \leqslant \pi$. The theorem is applied to a heat-conduction-type problem, to the difference analogue of the equation $\nabla^2 u - cu = f$ and to that of the equation $\nabla^4 u + 12\nabla^2 u + 36u = f$; it is found that the second of these problems can be solved by this technique only when the domain D is a half-plane, but the first and third can be solved for more general domains. There are 4 Soviet-bloc references.

ASSOCIATION: Mathematical Institute of the Czechoslovak Academy of Sciences

SUBMITTED: January 25, 1961

Card 8/8

BABUSHKA, I.; PRAGER, M.; VITASEK, E. (Praga)

Closure of computation processes and the drift method. Zhur. vych. mat. i mat. fiz. 4 no.2:351-353 Mr-Ap '64. (MIRA 17:7)

VITASEK, Emil

"Numerical solution of ordinary and partial differential equations" edited by L.Fox. Reviewed by Emil Vitasek. Aplikace mat. 8 no.4:314-315 '63.

WUNSKA, Ivo; VITASEK, Emil

Wiener-Hopf technique in the theory of difference equations.II.
Archiw mech 13 no.4:457-469 '61.

1. Mathematical Institute, Czechoslovak Academy of Sciences, Praha.

VITASEK, Emil

A numerical calculation of quasi-stationary solution of heat conduction equation. Aplikace mat 5 no.6:412-441 '60.

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BABUSKA, Ivo, (Praha); Vitasek, Emil (Praha)

Wiener-Hopf technique in the theory of difference equations.
Archiw mech 13 no.4:457-469 '61.

1. Mathematical Institute, Czechoslovak Academy of Sciences, Praha.

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AUTHOR: Vitásek, Emil'

TITLE: Numerical treatment of the quasi-stationary solution for the heat conducting equation

PERIODICAL: Aplikace matematiky, v. 5, no. 6, 1960, 412 - 441

TEXT: This is a continuation of previous work published by the author (Ref. 1: Über die quasistationäre Lösung der Wärmeleitungsgleichungen, Apl. Mat. 5, 1960, 109 - 140) and describes the following problems: Let $h_n = h_o/2^n$, $\tau_n = \tau_o/2^{2n}$ ($n = 0, 1, 2, \ldots$), $h_o = b/N_1$, $\tau_o = t_o/N_2$ (N_1, N_2 are natural numbers)

$$0 < \frac{\tau_n}{ah_n^2} = \beta < \frac{1}{2} \qquad (2.1.1)$$

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a, b, t_o are positive constants. S_n represents a multitude of points $[kh_n, l\tau_n] \in E_2(k, l = 0, \pm 1, \pm 2 \ldots)$ and similarly $S_n^{(0)}$ ($S_n^{(1)}$) a multitude of points $kh_n \in E_1 (l\tau_n \in E_1)(k(l) = 0, \pm 1, \pm 2, \ldots)$. The points of the network S_n, $S_n^{(i)}$ will be called nodes and the functions defined on S_n, $S_n^{(i)}$ = network functions. If A_n is an operator which to the function $f_n(x)$ defined on $(0, \infty)$ coordinates the solution of the equation

$$\frac{u_n(x, t + \tau_n) - u_n(x, t)}{\tau_n} - \frac{1}{a} \frac{u_n(x + h_n, t) - 2u_n(x, t) + u_n(x-h_n, t)}{h_n^2} = \frac{1}{\tau_n} z_n(x, t + \tau_n) \qquad (2.3.2)$$

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$[x, t] E(\langle 0, \infty) \cdot \langle 0, T)) \cap S_n$; $z_n(x, t)$ is a network function defined by the relations:

$$z_n(x, t) = \int_{t-\tau_n}^{t} q(s + kt_o)\, ds \text{ for } kb < x < (k + 1)b, \tag{2.3.3}$$

$$z_n(kb, t) = \frac{1}{2}\left[\int_{t-\tau_n}^{t} q(s + (k - 1)t_o)ds + \int_{t-\tau_n}^{t} q(s + kt_o)ds\right],$$

(a, T are positive constants, $T > t_o$, q(t) is a given function) under the initial condition of $u_n(x, 0) = 0$ for $0 < x < b$, $u_n(x, 0) = f_n(x - b)$ for $b < x < \infty$ and the marginal condition $u(0, t) = 0$ for $t > 0$, for $t = t_o$ that is $(A_n f)(x) = u_n(x, t_o)$. It is

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shown that in some quantities of the network function M_n there exists a quasi-stationary solution, if there is such a function $f_n \in M_n$ that $(A_n f_n)(x) = f_n(x)$ is valid. The following theorems are proved: Theorem 1: If M_n is the multitude of function f_n defined for $\langle 0, \infty) \cap S_n^{(0)}$ for which is valid:

$$0 \leqq f_n(x) \leqq \alpha x + b\alpha, \quad x \in \langle 0, \infty) \cap S_n^{(0)} \qquad (2.4.15)$$

(α is a definite constant): Then the function q(t) from Eq.(2.3.3) is continuous, positive, and limited in $0, \infty$. There then exists in M_n one quasi-stationary solution. Theorem 2: Let

$$f_n^{(o)} \in M_n, \quad f_n^{(k+1)} = A_n f_n^{(k)}, \quad k = 0, 1, 2 \ldots$$

then the function $f_n^{(k)}$ converges for $k \to \infty$ uniformly with the quasi-stationary solution. Theorem 3: If f_n is the quasi-stationa-

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D256/D304

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ry network solution, the network function $f_n(x)$ is defined for those x, for which it is not defined in linear fashion. The column of continuous function thus gained will then converge for $n \to \infty$ locally uniform with the quasi-stationary solution. There are 6 references, 5 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Matematický ústav Praha (Mathematical Institute, Prague)

SUBMITTED: November 6, 1959

Card 5/5

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AUTHOR: Vitásek, Emil (Prague)

TITLE: The n-dimensional Fourier transform in the theory of difference equations

PERIODICAL: Archiwum mechaniki stoswanej, v. 12, no. 2, 1960, 185 - 202

TEXT: According to its contents, the present paper belongs to the series of studies originated by I. Babuska (Ref. 1: The Fourier Transform in the Theory of Difference Equations and its Applications, Arch. Mech. stos., 4, 11, 1959, 349-381). In these studies an attempt is made to construct a theory of integral transforms of functions defined at the meshpoints of a net in such a manner that it becomes possible to make use of the theory for difference equation problems, analogically, as integral transforms are presently used for the solution of differential equations. The contents of this paper cover the theory of the n-dimensional Fourier transform

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of mesh functions; in this respect it is closely connected to (Ref. 1: Op.cit.) where this theory was constructed for the one-dimensional case. The Fourier transform of Mesh Functions is a periodic function over the whole set of functions which have continuous derivatives of all orders and for which the following is true: for every two n-tuplets of non-negative integers $p = (p_1; \ldots, p_n)$, $q = (q_1 \ldots, q_n)$ there exists a constant $C_{p,q}$ such that

$$/x^p D^q \varphi(x)/ \quad C_{p,q} \tag{2.1}$$

for every

$$x \in E_n \quad (x^p \equiv x_1^{p1} \ldots x_n^{pn}, \; D^q \equiv \frac{\partial q_1 + \ldots + q_n}{\partial x_1^{q1} \ldots \partial x_n^{qn}}).$$

It is shown that similarly to the one-dimensional case, the mapping is algebraically and topologically isomorphic. A number of examples are given to illustrate the theory, the most significant

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The n-dimensional Fourier ...

ones being

$$H[g(s_1+1,s_2)+g(s_1-1,s_2)+g(s_1,s_2+1)+g(s_1,s_2-1)-4g(s_1,s_2)]- \\ -Cg(s_1,s_2)=-f(s_1,s_2), \tag{4.1}$$

an inelastic plane network on elastic supports with a constant horizontal projection H of stress, and

$$\begin{cases} a(0,0)=-4H-C, \\ a(1,0)=a(-1,0)=a(0,1)=a(0,-1)=H, \\ a(s_1,s_2)=0 \quad \text{for} \quad \|s\|>1. \end{cases} \tag{4.3}$$

Green's function of the difference equation of heat conduction in n variables. There are 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Matematical Institute, Czechoslovak Academy of Sciences

SUBMITTED: November 25, 1959

Card 3/3

23518
P/033/61/013/001/001/009
D242/D301

24.4.200 1103, 1327, 1121 also 2807

AUTHORS: Babuška, Ivo and Vitásek, Emil (Prague)

TITLE: The Wiener-Hopf technique in the theory of difference equations

PERIODICAL: Archiwum mechaniki stosowanej, v. 13, no. 1, 1961, 3-21

TEXT: In this paper, the results of I. Babuska's work (Ref. 1: The Fourier Transform in the Theory of Difference Equations and its Applications, Arch. Mech. Stos., 11 (1959) 349-381) is extended to the solution of the Wiener-Hopf problem in the one-dimensional case. The problem is defined as follows: M denotes the set of all integers; R denotes the linear space of all bounded complex functions defined on M; R_+ denotes the subspace such that $f(n) = 0$ for $n < 0$; $f_+(n) = 0$ and $f_-(n) = f(n)$ if $n < 0$; $f_+(n) = f(n)$ and $f_-(n) = 0$ if $n \geq 0$; Given a function $a \in R$ such that to every integer $p \geq 0$ there exists a constant C_p with $|a(n)(|n|^p + 1)| \leq C_p$ for all $n \in M$ (2.2)

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Then the map A of the space R into R defined by the relation

$$(Af)(n) = \sum_{l=-\infty}^{\infty} f(l)a(n-l) \qquad (2.3)$$

is called the convolution map and the set of all functions $a \in R$ having the properties described is denoted by $\hat{R}$. The map A_+ is defined by $(A_+f) = (Af)_+$; then the Wiener-Hopf A_+ problem is the problem of finding a function $g \in R_+$ such that $A_+g = f$, where $f \in R_+$ is given. If $a \in \hat{R}$ has index 0, this problem has just one solution

$$g = \mathcal{F}^{-1}\left\{\frac{1}{\mathcal{F}c}\mathcal{F}\left([\mathcal{F}^{-1}(\mathcal{F}d \cdot \mathcal{F}f)]_+\right)\right\}, \qquad (5.1)$$

where

$$\mathcal{F}c = e^{\mathcal{F}([\mathcal{F}^{-1}(\log \mathcal{F}a)]_+)}, \quad \mathcal{F}d = e^{-\mathcal{F}([\mathcal{F}^{-1}(\log \mathcal{F}a)]_-)}, \qquad (5.2)$$

where $\mathcal{F}$ is the Fourier transform operator such that

$$\mathcal{F}g = \sum_{n=-\infty}^{\infty} g(n)e^{inx}$$

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The Wiener-Hopf technique...

and $a \in R$ has an index equal to zero, if a) $\mathcal{F}a \neq 0$ for all x, b) $(\lg \mathcal{F}a)(\pi) - (\lg \mathcal{F}a)(-\pi) = 0$ where a single branch of lg is taken in the whole interval. If $\mathcal{F}a$ is a real-valued function and if there is $(\mathcal{F}a)(x) \neq 0$ for all x, then a has index 0. The use of the theorem is demonstrated by the solution of two problems: the first is that of an inelastic network on an elastic support of the Winkler type; the second is the relaxation of Poisson's problem for an infinite strip with mixed boundary conditions. There are 2 figures and 9 references: 8 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: B. Noble, Method Based on the Wiener-Hopf Technique for the Solution of Partial Differential Equations, Pergamon-Press, London, New-York, Paris, Los-Angeles, 1958.

ASSOCIATION: Mathematical Institute of the Czechoslovak Academy of Sciences

SUBMITTED: August 1, 1960

Card 3/3

VITASEK, E.

"Effect of the formulation of marginal conditions on the speed of convergence in the solution of partial differential equations by the difference method"
p. 163 (Institute of Mathematics, Czechoslovak Academy of Sciences) Vol. 2, no. 3, 1957

SO: Monthly Index of East European Accessions (EEAI) LC, Vol. 7, no. 5, May 1958

Influence of the Formulation of the Boundary Conditions on the Convergence Rate of the Solution of Partial Differential Equations by the Difference Method

Vitásek, Emil. **Einfluss der Formulierung der Randbedingungen auf die Konvergenzgeschwindigkeit bei der Lösung von partiellen Differentialgleichungen mittels der Differenzenmethode.** Apl. Mat. 2 (1957), 163–183. (Czech. Russian and German summaries)

2
1-F/W

Die vorliegende Untersuchung zerfällt in fünf Abschnitte. Zuerst wird die Lösung der partiellen Differentialgleichung (*) $\partial^2 u/\partial x^2 = \partial u/\partial t$ im Bereich R: $(0<x<a, 0<t<T)$ unter den Anfangsbedingungen

$$u(x, 0)=p(x) \text{ für } 0<x<a;$$

$$\frac{\partial u(0, t)}{\partial n}=Q_1(t), \quad \frac{\partial u(a, t)}{\partial n}=Q_2(t), \quad 0<t<T,$$

behandelt. Wird p gewählt, und die Ebene (x, t) innerhalb R mit Geraden $x=mh$, $t=n\tau$ überdeckt, wobei $h=a/p$, $\tau=\beta h^2$, $0<\beta<\frac{1}{2}$, m, n ganz, so bestimmen die Schnittpunkte dieser Geraden ein von den Parametern h und τ abhängiges Netzmaschensystem. Die Methode der Lösung der Differentialgleichung (*) mit Hilfe einer solchen Netzüberdeckung (Differenzenmethode) kommt auf die Kenntnis einer Funktion $U(x, t)$ hinaus, die in den Maschenpunkten innerhalb $\bar{R}$: $(0\leqq x\leqq a, 0\leqq t\leqq T)$ definiert ist

Ju
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und in jedem in R gelegenen Maschenpunkt den Bedingungen

$$\frac{U(x+h, t)-2U(x, t)+U(x-h, t)}{h^2}=\frac{U(x, t+\tau)-U(x, t)}{\tau}$$

und $U(x, 0)=p(x)$ auf der Geraden $t=0$, $0\leqq x\leqq a$ genügt. An Stelle der Anfangsbedingungen treten die Differenzengleichungen

$$\frac{U(h, t)-U(0, t)}{h}=-Q_1(t),\ \frac{U(a, t)-U(a-h, t)}{h}=Q_2(t).$$

Mit U und u ist auch $\varepsilon(x, t)=U(x, t)-u(x, t)$ in jedem Maschenpunkt innerhalb R definiert. Für $\varepsilon(x, t)$ wird bewiesen: die Funktion $\varepsilon(x, t)$ genügt in R der Abschätzung $|\varepsilon(x, t)|\leqq Mh$, wobei M nur von R, von u und den Ableitungen dieser Funktion bis zu vierten Ordnung, aber für hinreichend kleine h nicht von h abhängt. Die Funktion $u(x, t)$ kann dabei den angegebenen Bedingungen unterworfen werden, wobei für $t\geqq t_0>0$ die Geschwindigkeit der Nullkonvergenz von $\varepsilon(x, t)$ genau durch h gegeben ist. Als Anwendungen der Theorie bieten sich die zweiten und dritten Randwertaufgaben der Theorie der Wärmeleitung im ein- und zweidimensionalen Fall sowie das dritte Randwertproblem für die Laplacesche

Influence of the Formulation of the Boundary Conditions on the Convergence Rate of the Solution of Partial Differential Equations by the Difference Method

Influence of the Formulation of the Boundary Conditions on the Convergence Rate of the Solution of Partial Differential Equations[18] by the Difference Method

Gleichung $\partial^2 u/\partial x^2 + \partial^2 u/\partial y^2 = 0$. Zum Schluß wird ein numerisches Beispiel für den Fall der Differentialgleichung (*) mit der Anfangsbedingung $u(x, 0) = e^x$ und den Randbedingungen $\partial u(0, t)/\partial x = e^t$, $\partial u(1, t)/\partial x = e^{t+1}$ im Intervall $\langle 0,.1\rangle \times \langle 0; 0{,}24\rangle$ tabellarisch durchgerechnet. Die Arbeit ist für Verfasser durch die Unzweckmäßigkeit des Ersatzes der Ableitungen in der Differenzenmethode durch die zugehörigen Differenzen bei der Formulierung der Randbedingungen veranlaßt worden. Dabei wurden nämlich bisher der Differentialoperator mit der Genauigkeit h^2, dagegen die ersten Ableitungen in den Randbedingungen mit der Genauigkeit h approximiert. Auch die Interpolation der ersten Randbedingungen durch eine Parabel im Falle der Wärmeleitunggleichung ist unzweckmäßig.

M. Pinl (Köln)

VITASEK, Emil (Praha, Czechoslovakia)

The non-dimensional Fourier transform in the theory of difference equations. Archiw mech 12 no.2:185-202 '60.

1. Mathematical Institute, Czechoslovak Academy of Sciences.

BABUSKA, Ivo; VITASEK, Emil (Praha)

Wiener-Hopf technique in the theory of difference equations. I.
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1. Mathematical Institute, Czechoslovak Academy of sciences, Praha.

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ACC NR: AP6009992 SOURCE CODE: CZ/0026/65/010/002/0130/0145

AUTHOR: Vitasek, Emil (Candidate of sciences) 27 B

ORG: Mathematical Institute, CSAV, Prague (Matematicky ustav CSAV)

TITLE: Stability of numerical processes

SOURCE: Aplikace matematiky, v. 10, no. 2, 1965, 130-145

TOPIC TAGS: numeric analysis, parameter

ABSTRACT: The article defines numerical process and gives examples of them which show their features which lead to questions of their stability. Numerical processes are examined which depend on an arbitrarily chosen parameter, and the dependence of stability on that parameter is described. Orig. art. has: 7 figures, 24 formulas, and 4 tables. [JPRS]

SUB CODE: 12 / SUBM DATE: none / ORIG REF: 002 / OTH REF: 002
SOV REF: 001

Card 1/1

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